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ABSTRACT

This document contains a description of the activities, concerns, findings, and recommendations of the Idaho Industrial Arts Futuring Committee. It will serve as the foundation upon which subsequent revision of the state's industrial arts programs, to be renamed Industrial Technology Education (ITE), can be built. Section I on philosophy and foundation presents the findings and recommendations regarding the social context, implications for education, and the nature of industrial technology. The name Industrial Technology Education is recommended and a philosophy for ITE is provided. Section II on roles, missions, goals, and objectives contains the findings and recommendations for the rationale, mission, ITE goals, and ITE content. Section III on scope and sequence provides committee findings and then recommends a plan for each ITE course, the minimum components for each ITE program, and a sample list of ITE courses consistent with scope and sequence recommendations. This list of courses details grade level, primary function, course name, and course content. Section IV on implementation and long-range plan presents the recommendations for activities in the form of six goals to help Idaho make the transition to a dynamic ITE program. Five recommendations for the next year (1988) are made. (YLB)

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INDUSTRIAL TECHNOLOGY

Meeting the Challenges Beyond the Horizon

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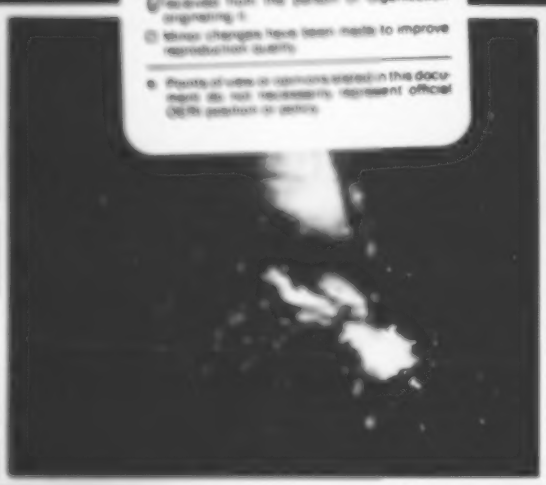

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State Division of
Vocational Education

Futuring Committee Report
1987

INDUSTRIAL TECHNOLOGY EDUCATION

Findings and Recommendations
of the

BLUE RIBBON COMMITTEE

ON

THE FUTURE OF INDUSTRIAL ARTS EDUCATION

IN IDAHO

IDAHO DIVISION OF VOCATIONAL EDUCATION

650 W. State Street

Boise, Idaho 83720

JUNE, 1987

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STATE DIVISION OF VOCATIONAL EDUCATION
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This project involved a dedicated team of professionals who, through hard work and determination, have written a document that can be used as a blue print for Industrial Technology Education in Idaho.

This report has been reviewed by the State Division of Vocational Education staff, and the recommendations included are supported by the State Division. We accept this report and its recommendations as a statement of policy and as a future direction for Industrial Technology Education.

The State Division of Vocational Education wishes to thank the committee members, administrators, boards, and the many individuals for the contributions of time, effort, and resources that produced this report.

Many of the recommendations parallel Tomorrow's Workforce, The Future for Vocational Education in Idaho in a statement of purpose and direction. The plan for Industrial Technology must be in harmony with the state planning document, Tomorrow's Workforce. Moreover, State Board policy requires all budgeting and operational activity be linked to the Board approved State Plan. Using the findings and recommendations from this report as a plan for the future, the changes that are needed can and must be made in programs. This document does not describe in detail how to make these changes but does outline the purpose and direction for these changes.

William Ullery
State Administrator

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A project funded by the State Division of Vocational Education in cooperation with the University of Idaho.

Your reactions

This document reflects the best professional judgments of a dedicated team of professionals. However, it is a professional responsibility to continually evaluate new information and then to integrate the results of such evaluations into decisions. Consequently, the Futuring Committee **requests you share your facts, comments and impressions.** We ask that they include a constructive component that would allow us to improve this report we proudly present to you.

Comments should be addressed to:

State Supervisor of Industrial Technology Education
State Division of Vocational Education
650 West State Street
Boise, ID 83720

The report represents the commitment of the industrial arts profession and it is our intent that this effort will result in helping Idaho's youth understand technology and its effect on society.

The opinions expressed in this report represent an effort to ensure that all points of view are represented. The report represents the systematic evolution of the industrial arts profession.

OVERVIEW

This document contains a description of the activities, concerns, findings and recommendations of the Idaho Industrial Arts Futuring Committee. As such, it will serve as a foundation upon which subsequent revision of the state's industrial arts programs, to be renamed Industrial Technology Education, can be built. Only the programs that have been revised will be named Industrial Technology and only those programs will be actively supported by the Division of Vocational Education.

Funded by a grant from the Idaho State Division of Vocational Education, this project drew together a steering committee of professionals who committed themselves to many hours of challenging work to build a better future for Idaho's youth. These leaders were carefully selected to represent Idaho's industrial arts profession; teachers from large and small districts, teacher educators, school district administrators, supervisors, and leaders of the state industrial arts education association. In addition, representatives of industry provided particularly useful perspectives on the challenge of working toward a program that better reflects our technological world.

The futuring committee met seven times over a period of two years (1986-1987). Six regional and additional sub-committee meetings were held. The committee received and reviewed input, in oral and written forms, from national, state, and local leaders. The emerging curriculum changes of other leading states and recommendations advanced by the International Technology Education Association and the Industrial Arts Division of the American Vocational Association, were reviewed. Finally, and only after much deliberation of alternatives, the committee selected and integrated the most appropriate choices and synthesized these in this report--A document which sets forth goals for which our profession must attain.

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SECTION I: PHILOSOPHY & FOUNDATION

PHILOSOPHY

Findings: Social Context

Contemporary and future society are clearly different from what America experienced during its first industrial revolution. Some elements of the industrial revolution remain, but many more have changed. Technology as a force has affected most facets of our existence. Technology is the single most distinctive characteristic that sets current and anticipated futures apart from previous ones.

The private sector has been required to grapple with technology engendered issues such as productivity, technological capability and global competitiveness. Its workers have been challenged by the need for currently marketable skills--in cognitive, affective and psychomotor domains--in order to maintain their ability to support themselves and contribute to our free-enterprise economy. Given technology's advances, our workers find these skills to be constantly changing.

Similarly, legislators have been pressed to understand technology and its effects as they attempt to frame policies for the public good. Given the exponential proliferation of technology and its complexity, it is increasingly difficult for people to exercise appropriate citizenship functions, particularly given technology and its media offspring.

Citizens have found themselves bewildered by increasingly complex consumer decisions. Often they face decisions involving trade-offs between immediate gain for long-range unknowns or even known but preferably ignored negative consequences. Similarly, recreational environments and activities have increasing technological components, as do our personal and societal learning activities.

Findings: Implications for Education

1. **"Where do people develop the understanding, skills, and attitudes to deal with forces such as technology?"** Clearly our society uses formal schooling as a principal method to this end--at least for youth, and currently in increasing numbers, for adults.

2. **"What are the schools doing to help youth and adults address technology's challenges?"** What systematic efforts are in place to develop technologically appropriate understanding, skills, and attitudes in elementary, secondary, postsecondary, adult and continuing education?

3. **The committee has found little evidence of any widespread, systematic, school-based program comprehensively addressing technology in Idaho.** Although some other states are implementing such a thrust, no statewide program exists in Idaho. However, after an assessment of the industrial arts profession's capabilities, the committee decided that because of the overall orientation of its teachers, and because of its large, in-place capacity for providing technologically oriented courses and

laboratory experience, the industrial arts profession, more than any other school subject field, represented the best possible and most feasible group to offer such a program.

Recommendations

The futuring committee concludes that industrial technology education programs should teach about industrial technology and should do so in a way that serves as a vehicle to build understanding, skills, and behaviors that can be generalized and applied in other technologies. Furthermore, because all people are affected by technology, the committee concludes that a minimum of one semester-long course experience in industrial technology should be required of all Idaho's junior/middle school youth (grades 6-9).

Findings: The Nature of Industrial Technology's Implementation

In reflecting on the nature of industrial technology, the committee also noted the findings of key educators.

1. Not only is learning by doing, working with real objects, a vital component of education, but it is increasingly important for younger students.

2. Given the trend to an information society, schools could easily become entirely media or print-based, a shift that would bring with it the elimination of other learning modes.

Similarly, the committee observed the contributions of vocational student organization activity to the individual's development.

NAME

Findings

Industrial arts educators have, since at least 1904, addressed the content of industry. Given the fact that industry uses technology to attain its goals, it follows that industrial art's content must be derived from industrial technology. Therefore, if the industrial arts' content derives from industrial technology, why not its name? Other disciplines such as mathematics, science and English take their names from their content--why not ours?

Recommendations

This committee recommends that in the state of Idaho the thrust of the industrial arts discipline be refocussed by changing the name to industrial technology education for those programs which fit the new definition.

Findings: The Industrial Arts/Industrial Technology Education Program.

The committee concluded that a technologically relevant industrial technology education program is both a necessary and feasibly important way to address the development of the technological capability of Idaho students, both youth and adults.

Recommendations

The committee recommends that Idaho's industrial arts program be restructured to reflect industry and professional practice with greater fidelity and that its new name, industrial technology education, be used to symbolize this.

Summary Recommendations

In summary and to lend context to the preceding recommendations, the committee recommends that Idaho's industrial arts program:

- **Those programs which implement the ITE curriculum become known as industrial technology education**
- **Derive its content from the technology used by industry**
- **Be composed of three components:**
  - **Formal study thats competency based**
  - **Laboratory/hands-on application**
  - **Student organization activity (AIASA)**

THE PHILOSOPHY OF INDUSTRIAL TECHNOLOGY EDUCATION

Industrial technology is a comprehensive action-based educational program that is concerned with technical processes, the evolution, utilization, and significance with industry and industries' organization, personnel systems, techniques, resources, products, and social and cultural impact. Industrial technology programs assist individuals to understand industry and technology and to discover and develop individual potential. Action based activities provide the basis for the study of technology. These activities assist individuals in making informed and meaningful occupational choices, provide opportunities for creativity and problem solving, and prepare individuals for entry into advanced vocational and technical education postsecondary programs.

SECTION II: ROLES, MISSIONS, GOALS AND OBJECTIVES

Findings: Rationale

Since industry and technology are distinctive characteristics of the American culture, and since one of the key purposes of education is to transmit the culture to future generations, it follows that it is necessary for the schools to provide youth with an insight into, an understanding of, and selected capabilities with, the technological nature of this society. Industry and technology spring from the human ability to reason, solve programs, create, construct, and use materials, tools, machines and processes imaginatively. Because these abilities are an integral part of our technological culture they should be developed in all students, regardless of their educational goals or occupational aspirations.

Society's response to aspirations and forces has been to evolve a school-based program called **industrial technology education**. This program was implemented to help students understand industrial and technological evolution; thereby, forming a base of organized values and behaviors that facilitates their adjustment to changing technological environments. Also, carefully developed is an increased capacity to participate in society by using technological means for creative solutions to present and future individual and societal problems--a capability that will enable students to better control technology in their lives.

Recommendations

In light of the preceding, the committee recommends that the mission of those programs that have made the transition from industrial arts (now known as industrial technology education) as an essential component of Idaho's education system be: (Tomorrow's Workforce, Goal IV, A. & B.)

1. **To serve as the component of general education that develops generalizable understandings, capabilities, values and behaviors related to industrial technology in all youth who elect to take the course(s).**

2. **To serve as a component of specialized education that contributes to meaningful occupational choice and/or preparation in the technological society.**

Findings: Mission

The mission of industrial technology education as a school program is to develop the human potential of all students for responsible work, citizenship, and leisure roles in a technological society. To accomplish both of its designated educational roles, **industrial technology education** programs must systematically plan to address each domain of the mission--cognitive, affective, and psychomotor.

Recommendations

The committee concludes that every industrial technology education program in Idaho must address each domain of the program's mission and that these are to: (Tomorrow's Workforce, Goal III, A.)

1. Develop each person's ability to comprehend and apply the concepts of industrial and technological systems.

2. Develop each person's values and behaviors related to the appropriate use of industrial technology--its tools, machines, resources, processes and products.

3. Develop each person's ability to use materials, technological processes, and hardware to achieve constructive work skills and enhance occupational opportunity.

Findings: Industrial Technology Education Goals

The committee reviewed professional association and state goals for industrial arts and/or industrial technology programs. A high degree of similarity was noted although the actual words and format varied widely. Furthermore, the committee found that its own sense of the program's goals represented a synthesis of much of what was reviewed. Since the group's views were not particularly conservative or leading-edge in nature, the committee clearly represents the mainstream of the profession.

Recommendations

The futuring committee advances the following synthesis of goals as its recommendations for Idaho's industrial technology education program. Every student participating in any implementation of the industrial technology education program should experience a systematically designed program of instruction and activity that after completion of the programs, the student will: (Tomorrow's Workforce, Goal III, A.)

1. Be cognizant of industry and technology and understand their position in our society and the free enterprise system.

2. Discover and develop individual talents, aptitudes, interests, and potentials as related to industry and technology.

3. Be cognizant of industrial processes and the practical application of scientific principles.

4. Develop technical problem-solving and creative abilities involving the use of materials, processes, and products of industry and technology.

5. Be cognizant of industrial and technological career opportunities and requirements, and develop those traits which help obtain and maintain employment.

6. Be cognizant of the social and economic implications of technology.

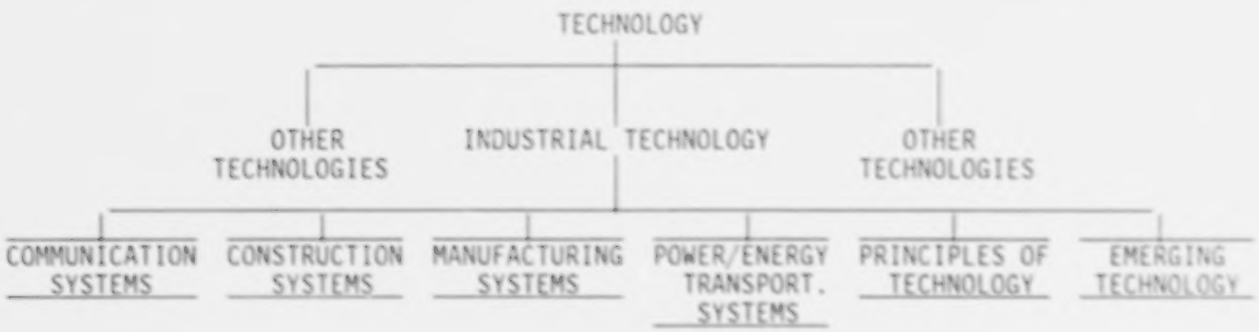
Findings: Content

Although in our material and technological society not everyone is a producer, all are consumers and users of the products of industry and its technology. Therefore, industrial technology education as a school program, draws its content from industry and the technology it uses to achieve its ends. Content is also selected by analyzing competencies individuals need to effectively use the products of a technological society.

Given the preceding philosophy and foundation, it is clear that the educational program known as industrial technology education derives its content, i.e. the subject matter it teaches, from industry. More specifically, this program focuses on the technology which industry uses to accomplish its ends. Obviously, this content is called industrial technology. It often is considered to be a body of knowledge or a discipline. As such, industrial technology is a subset of technology as shown by Figure 1.

It should be noted that this name, industrial technology, when used with the object education, refers to the profession that engages in delivering the content to students. Consequently, there are two context in which the term industrial technology can be used. In this section dealing with the subject matter of the program, reference is consistently to the use of industrial technology as content.

FIGURE 1. Relationship of technology to industrial technology



An analysis was conducted to identify the appropriate structure of industrial technology's content. The committee found other states using a variety of clustering schemes. Three, four, and five clusters were often contained in their implementation plans. Cluster names included communications, visual communications, graphic communications, energy, power, energy and power, transportation, manufacturing, construction, materials processing, and enterprise.

Recommendations

After reviewing the nature of industrial technology content as found in the literature of other state's projects, the Futuring Committee recommends, as shown in Figure 1, that:

1. Industrial technology be considered the use of technology by industry. As such, industrial technology coexists with agricultural and other technologies. (Carl Perkins Vocational Education Act, 1984, Part B, Sec. 251(a)15.)

2. Industrial technology be considered to consist of six clusters:

    Communication Systems
    Construction Systems
    Manufacturing Systems
    Power/Energy/Transportation Systems
    Principles of Technology
    Emerging Technology

SECTION III: SCOPE AND SEQUENCE

Findings: Scope and Sequence

The committee ascertained that a scope and sequence document essentially serves as a blueprint for the implementation of an education program that causes students and teachers to come together in appropriate facilities to work together toward attainment of the goals specified for the program. As such, the scope and sequence documents:

1. The courses (names and content) that comprise a program
2. The pattern of student flow through these courses (i.e. prerequisites)
3. The range of grade levels at which it is appropriate to offer each course
4. Which students are to be served
5. The interface between the program and other curriculum areas at the same level
6. Implementation patterns that accommodate varying school and/or program sizes
7. Articulation provisions with other programs at subsequent levels of education
8. The general nature of the program at each level of schooling

Recommendations

After review of the work in other states and also that of other subjects, such as home economics, welding, drafting, and agriculture, the futuring committee documented its conclusions in the statement of industrial technology education's scope and sequence. In this, the committee recommends that:

1. **Idaho adopt a restructured industrial technology education program as shown in Figure 2.**
2. **Technological awareness be developed by infusing an asset of technology-based learning activities into the regular ongoing elementary school curriculum. These activities should be designed to enhance mathematics, science, and social studies curricula with practical applications. One or more the school's or system's industrial technology teachers should be assigned to serve as resource person(s) to support infusion. (Tomorrow's Workforce, Goal II, C.)**

3. The Introduction to Technology course be required of ALL students in each of Idaho's school systems. This course should be a minimum of a semester in length and it must involve a systematic explanation of the most important tools, machines, materials, and processes of industrial technology. This course must contain key elements of each cluster, it cannot focus on only one cluster. Where interest and/or enrollment warrants, this course may be offered at any grade level and students may enroll again in subsequent years. This course is a prerequisite to all other industrial technology education courses.

4. Quality industrial technology education programs systematically incorporate careful articulation plans and agreements that facilitate student movement to: advanced educational opportunities offered by vocational, technical, or college institutions; the world of work; and/or other opportunities such as entrepreneurship. The articulation plan shows how the program contributes to and articulates with advanced vocational, technical, and postsecondary education opportunities, as well as the world of work. (Tomorrow's Workforce, Goal III, A.)

5. Each school establish its own scope of sequence that is compatible with the principles listed here. In doing so, the school needs to consider its overall enrollment, level of support and the nature of its community and industry. (Refer to Figure 3.)

   As a minimum, however, every industrial technology education program must include the components shown in Figure 2.

6. In each industrial technology education course, the instructor will develop a plan to integrate the following:

   a. Basic Competencies as taught in: (Tomorrow's Workforce, Goal II, C.)
      (1) Math
      (2) Science
      (3) Language Arts
      (4) Social Studies
   b. Employability Skills (Tomorrow's Workforce, Goal II, B.)
   c. Problem Solving Skills (Tomorrow's Workforce, Goal II, C.)
   d. Computer Technology (Tomorrow's Workforce, Goal II, C.)
   e. Student Leadership Skills (Tomorrow's Workforce, Goal II, D.)
   f. Career Awareness (Tomorrow's Workforce, Goal IV, A. & B.)

FIGURE 2.

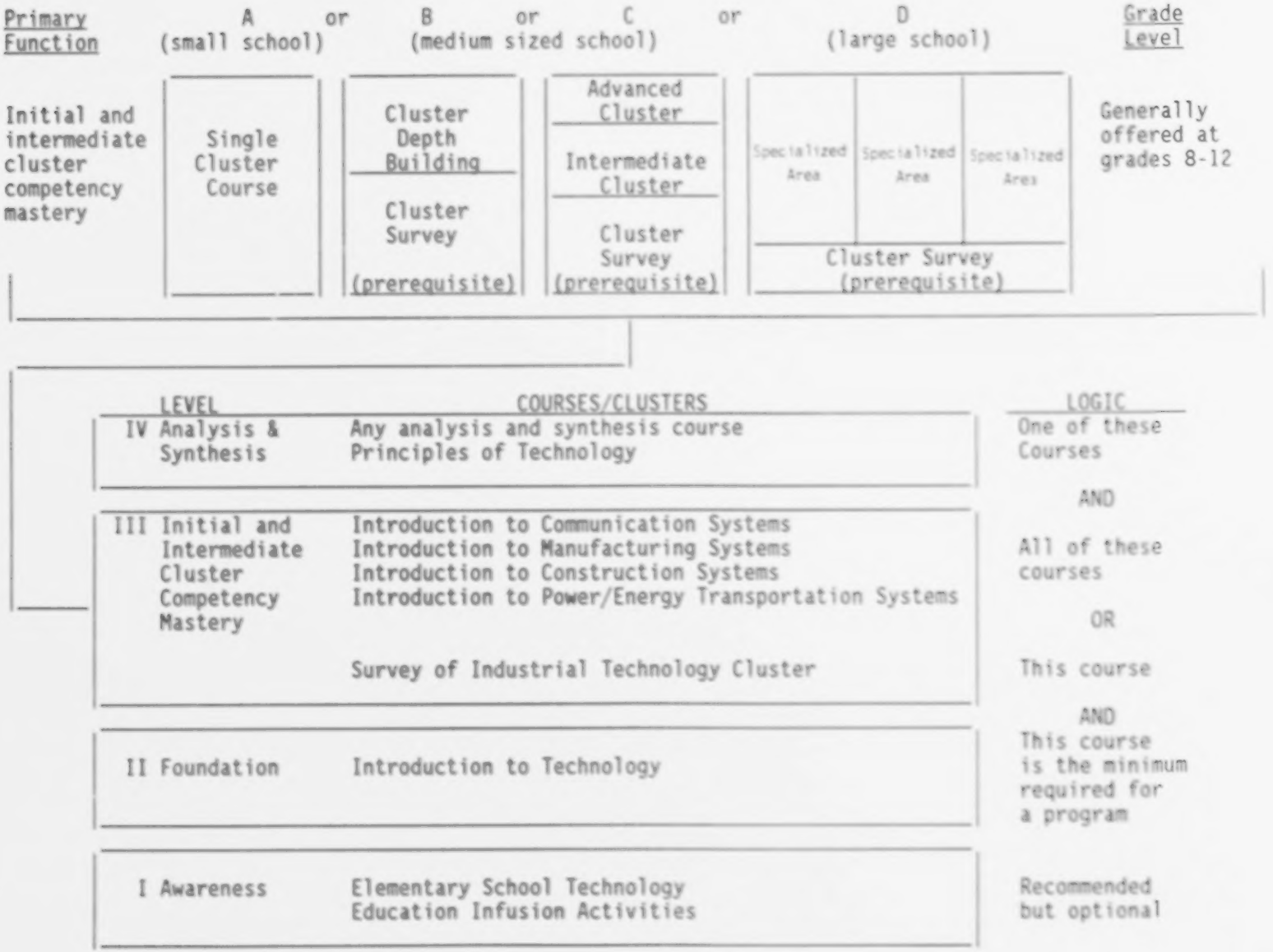

Primary Function
A (small school)
or
B (medium sized school)
or
C
or
D (large school)
Grade Level
Initial and intermediate cluster competency mastery
Single Cluster Course
Cluster Depth Building
Cluster Survey (prerequisite)
Advanced Cluster
Intermediate Cluster
Cluster Survey (prerequisite)
Specialized Area
Specialized Area
Specialized Area
Cluster Survey (prerequisite)
Generally offered at grades 8-12
LEVEL
COURSES/CLUSTERS
LOGIC
IV Analysis & Synthesis
Any analysis and synthesis course
Principles of Technology
One of these Courses
AND
III Initial and Intermediate Cluster Competency Mastery
Introduction to Communication Systems
Introduction to Manufacturing Systems
Introduction to Construction Systems
Introduction to Power/Energy Transportation Systems
Survey of Industrial Technology Cluster
All of these courses
OR
This course
AND
II Foundation
Introduction to Technology
This course is the minimum required for a program
I Awareness
Elementary School Technology Education Infusion Activities
Recommended but optional

FIGURE 3.

SAMPLE LIST OF INDUSTRIAL TECHNOLOGY EDUCATION COURSES CONSISTENT WITH SCOPE AND SEQUENCE RECOMMENDATIONS

GRADE LEVEL	PRIMARY FUNCTION	COURSE NAME	COURSE CONTENT
10-12	Analysis & Synthesis	Various descriptive titles are possible	Any content that requires students apply previous industrial technology derived competencies and/or build depth in a particular area An individually planned and executed investigation of the theory and practice of a significant facet of industrial technology A course wherein students design and produce goods or services for sale
10-12	Intermediate Cluster Competency Mastery	Technology Specialization II	Any specialization course that builds upon a Technological Specialization I course in any clusters
9-12	Initial Cluster Competency Mastery	Technology Specialization I	Any appropriate first level specialization course within any given cluster
8-12	Cluster Exploration	Introduction Cluster Courses	
7-10	Foundation	Introduction to Technology	(prerequisite)
K-6	Awareness	Elementary School Technology Education Activities	

SECTION IV: IMPLEMENTATION AND LONG-RANGE PLAN

The Blue Ribbon Committee on the Future of Industrial Arts recognized from the start that a mere document describing only the status of industrial arts would not have much of a beneficial effect. Nor would a document offering grand aspirations be effective. What was needed, however, was a carefully structured implementation plan--strongly supported by the combined efforts of the State Division of Vocational Education and the profession! Furthermore, the futuring committee noted that this effort must continue for some time before significant change can be expected.

The design of such a plan was the goal of the Idaho Industrial Arts Futuring Committee Project. The near-term activities are the most important and the longer-term ones constitute a long-range plan for the improvement of the profession.

Findings: Long-Range Plans

The steering committee identified and examined several excellent examples of long-range plans to improve the practice of the profession. Those of Missouri, New York, Illinois, New Jersey, Texas, and the ITEA were notable samples. Tomorrow's Workforce: The Future of Vocational Education in Idaho, a statement of purpose and direction was also reviewed. Analysis of these documents revealed several key principles:

1. Continual systematic effort is needed to achieve widespread change.

2. The Idaho Division of Vocational Education and its industrial technology education supervisor, teacher education institutions, local education agency supervisors, the state industrial technology education association, and leading edge teachers are the principal change agents.

3. To achieve significant program improvement, all change agent forces must consistently focus on the same goal.

4. All activities in the program improvement plans can be classified into one of the six goals:

   1.00 Goal - Develop a competency-based curriculum that meets student needs and reflects appropriate technology.

   2.00 Goal - Provide education and training that reflects the philosophy and goals of industrial technology education.

   3.00 Goal - Identify, promote, and obtain funding and resources for the implementation of optimal industrial technology programs.

   4.00 Goal - Establish a positive image of industrial technology education.

5.00 Goal - Develop and implement a continuous evaluation process which utilizes accepted standards to assess all elements of industrial technology education programs.

6.00 Goal - Establishment of teacher certification standards, or review and recommend changes of teacher certification standards.

5. Available funding is best redirected to encourage transition to industrial technology education. Only change should be funded.

Recommendations

The steering committee recommends the following activities, listed in order of priority within each category, as necessary to the long-range improvement of industrial technology education in Idaho. Each is carefully selected to provide the support and initiative needed to help Idaho's industrial arts program make the transition to become a dynamic and contemporary program that clearly reflects industrial technology. These recommendations are presented in six goals.

1.00 Goal - Develop a competency-based curriculum that meets student needs and reflects appropriate technology.
- 1.10 Define the curriculum as:
  - 1.11 Communication Systems
  - 1.12 Construction Systems
  - 1.13 Manufacturing Systems
  - 1.14 Power/Energy/Transportation Systems
  - 1.15 Principles of Technology
  - 1.16 Emerging Technology
- 1.20 Identify and develop valid social, academic, and technical competencies required by industry. (Tomorrow's Workforce, Goal II, A. B. C. & D.)
- 1.30 Establish a curriculum committee in each curriculum area.
- 1.40 Initiate a curriculum development cycle of research, write, pilot, evaluate, revise, and implement.

2.00 Goal - Provide education and training that reflects the philosophy and goals of industrial technology education.
- 2.10 Identify inservice needs.
- 2.20 Determine and assign inservice responsibilities.
- 2.30 Schedule yearly inservice on curriculum developments and promote programs in industrial technology education.
- 2.40 Revise University of Idaho Industrial Education Curriculum to be compatible with state standards. (Tomorrow's Workforce, Goal II, A. B. C. & D.)

3.00 Goal - Identify, promote, and obtain funding and resources for the implementation of optimal industrial technology programs.

- 3.10 Increase industrial technology education (ITE) funding level from various sources.
- 3.20 Utilize both grant funding and formula funding procedures for ITE programs as funds are available.
- 3.30 Revise state vocational education guidelines for funding ITE programs to include grade 7 through 12 on the secondary level.
- 3.40 Request Title II funds for curriculum development.

4.00 Goal - Establish a positive image of industrial technology education.

- 4.10 Promote an ongoing effort to explain industrial technology education to the public.
- 4.20 Cultivate a professional pride among industrial technology education instructors and their profession.
- 4.30 Seek to establish industrial technology education programs as essential elements in a well balanced curriculum.

5.00 Goal - Develop and implement a continuous evaluation process which utilizes accepted standards to assess all elements of industrial technology education programs.

- 5.10 Adopt existing standards (national) as Idaho Standards (ITE revised edition).
- 5.20 Obtain and continue to review program standards.
- 5.30 Establish formal procedures for program evaluation.
- 5.40 Utilize program evaluation results for program improvement and/or approval.

6.00 Goal - Establishment of teacher certification standards, or review and recommend changes of teacher certification standards. (Tomorrow's Workforce, Goal V, A.)

- 6.10 Review and revise existing certification standards for industrial technology education certification.
- 6.20 Make recommendations for specific criteria for industrial technology education certification.

RECOMMENDATIONS FOR NEXT YEAR (1988)

It is recommended that:

1. Funding be allocated to address professional development needs in 1987-88 and succeeding years.

2. The criteria for the 1988-89 Industrial Arts Grant Awards Program be revised to fund significant program change in the direction of the industrial technology education.

3. The criteria for the Teacher of the Year and Program of the Year be revised to represent the program change to industrial technology education.

4. A 6-region computer network connected to the ITEA Technology Link network be instituted and that it be supported by state funds and activity to help facilitate the transition to industrial technology education by increasing communications and raising awareness of professional development events.

5. The state identify and help establish pilot and demonstration sites to assist in the development and field testing of new materials in 1988-89.

POSTSCRIPT

The Futuring Committee urges all industrial arts/technology educators to join ranks and work together to address the priorities identified by this committee. Concerted action is needed to achieve the improvements so urgently needed to meet technology's challenge. Real change is possible when teachers and their associations, supervisor, teacher educators, business and industry, and State Division of Vocational Education, and Department of Education leaders work together. Idaho's future generations deserve no less. Let's build the future now!!

Additional documents are available from the State Division of Vocational Education for support and clarification of these recommendations

1. Industrial Technology Program Standards

2. List of selected references: Industrial Arts/Industrial Technology/Technology Education

3. Principles of Technology Curriculum Project, Units 1-14

4. Your Job, Selecting, Getting, Keeping, Changing, Vo.Ed. 202

5. The Carl D. Perkins Vocational Education Act of 1984

6. Curriculum subcommittee reports on:
   a. Communication Cluster
   b. Construction Cluster
   c. Power/Energy/Transportation Cluster
   d. Manufacturing Cluster

7. Blue Ribbon Futuring Committee Minutes for Industrial Arts

8. Industrial Technology Inservice Needs Survey, U of I and SDVE

9. Tomorrow's Workforce: The Future for Vocational Education in Idaho, 1/27/87